EMS User Manual

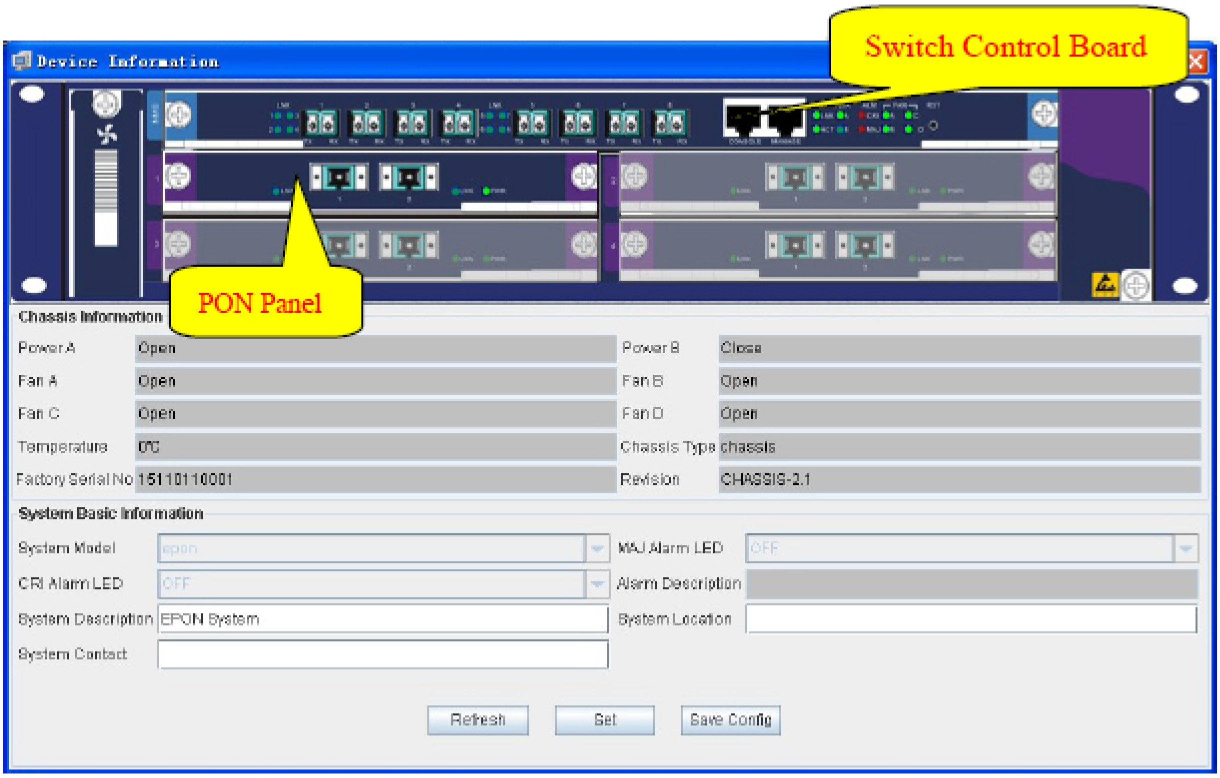
V1.0

Contents

EPON Equipment Management

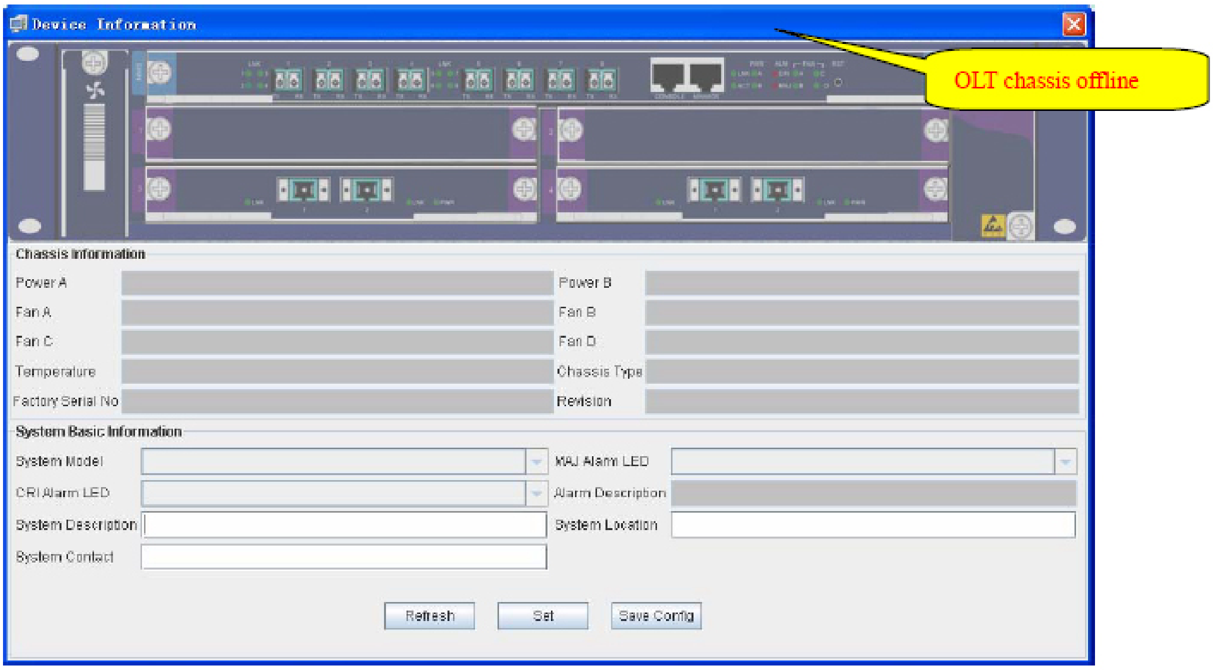
1.1.Chassis Management

You could check out GEPON OLT' s each module and each port 's status via the chassis management interface .Double click OLT chassis node in the topology tree ,then the OLT chassis management interface pops up as follows:



Pic 1. Online OLT

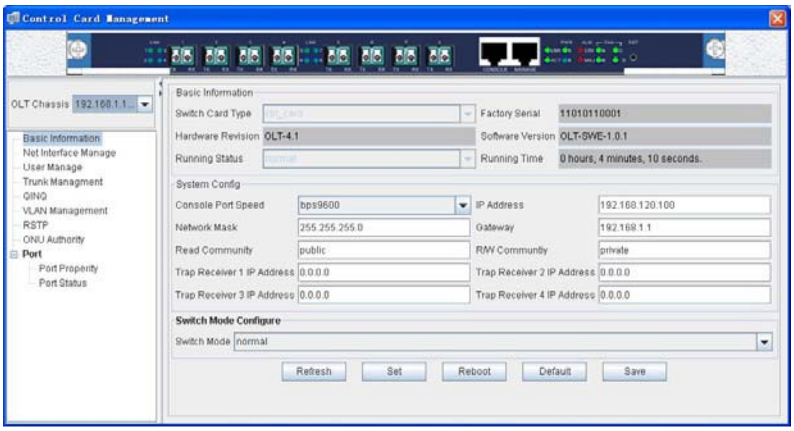
There are three layers in the above chassis. The top level is the switch control unit interface, the two levels in the bottom display four PON cards ranging from 1 to 4. The chassis interface refreshes automatically. The LED status corresponds with the OLT's real time status. When the OLT is offline , the EMS will show grey as follows:



Offline OLTDouble click selected device, the device will be highlighted.

1.2. Switch Control Board Management

Double click the switch control unit in the topology tree or you could click the switch control unit in the above chassis interface .You will find the picture as follow:

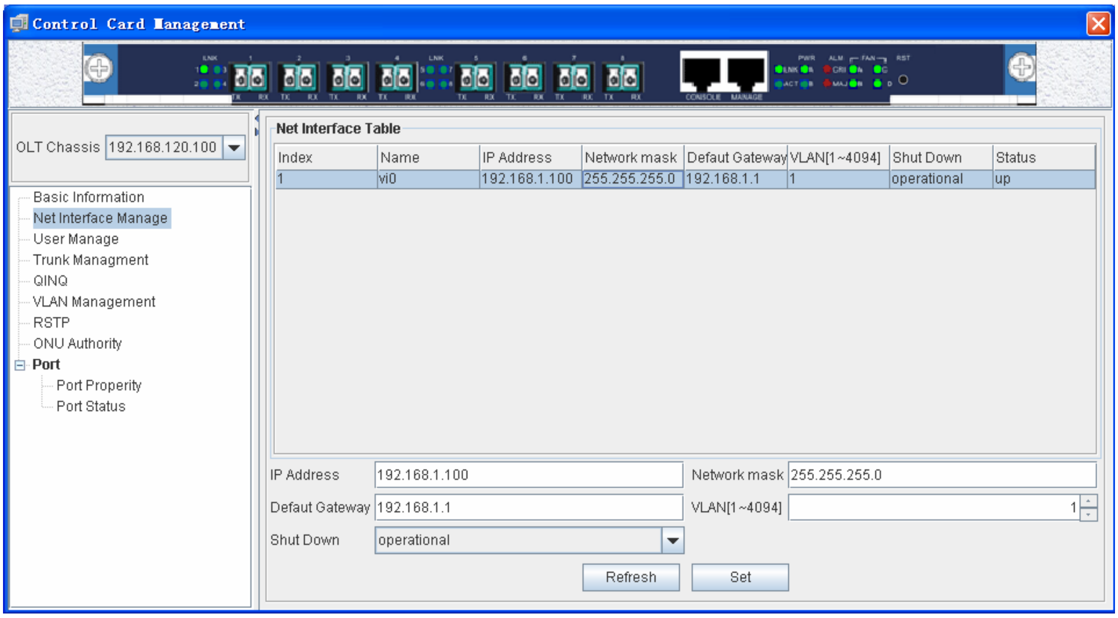


Switch Control Board Management Interface

1. 2. 1. Basic Information

EMS displays switch control board's basic information .Users could modify the networking configuration, such as IP address, network mask and gateway, etc.

1. 2. 2. In-band IP Port Management



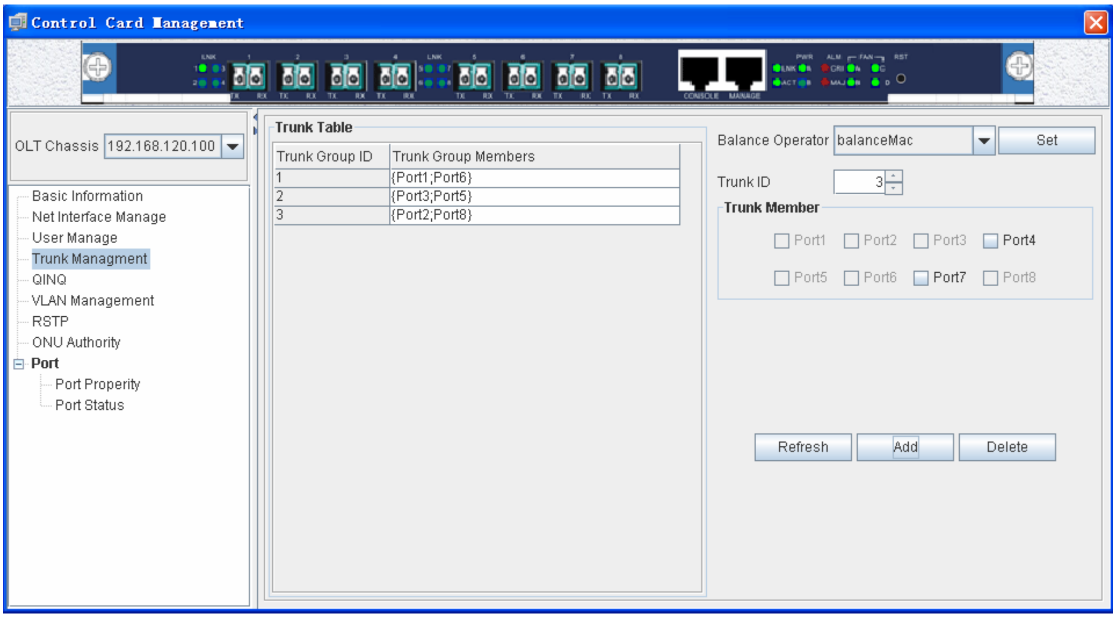
Inband IP Pot Management

The system support two IP ports: in-band IP and out-band IP ports.Each type just support one example .In-band IP makes up with "vi +number|". Vi0 is the first and the only in-band IP port .Out-band IP is composed with "cpm+number" .Cpm0 is the first and the only one out-band IP port.

Change the parameters in the right corner ,users can change in-band IP ,vi0's IP address ,mask ,broadcasting IP address ,enable or disable in-ban IP management port compellingly.

1. 2. 3. Trunk Management

Trunk (port convergence) is done by means of combining 2 or more physical ports into one logical port so as to increase the bandwidth between switch and the networking node .Once trucking these ports, this trunk port could own independent bandwidth with these combines ports total bandwidth .



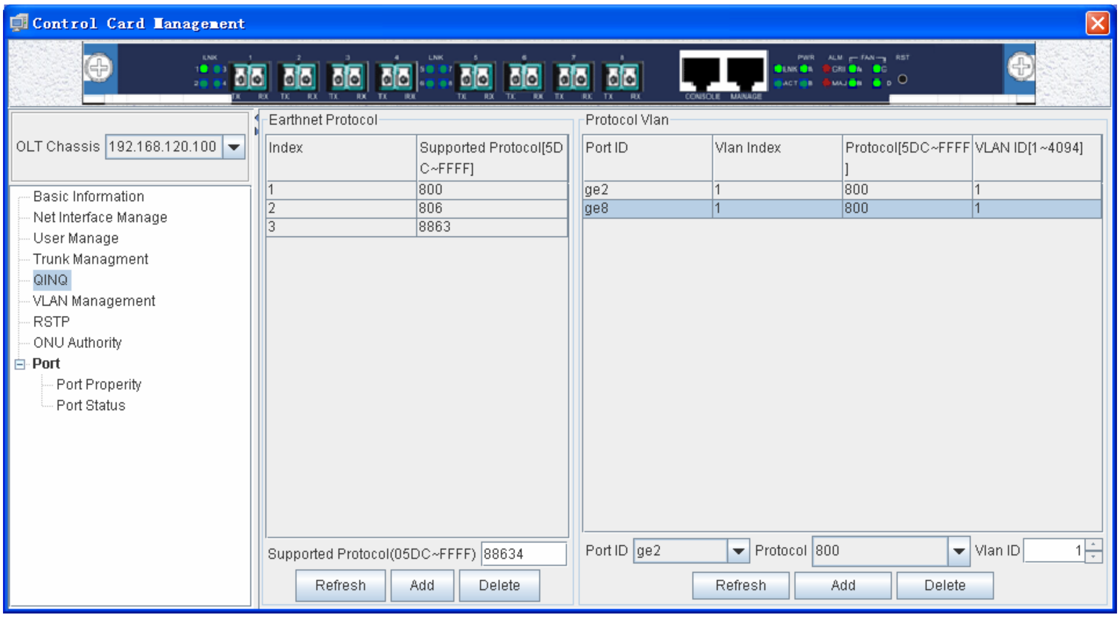
Trunk Management

Users can make up different trunk group with any casual combination among these8 uplink ports .Or users could appoint Trunk average balance method based on report file receiving port ,MAC address ,IP address ,transmission layer port number ,MAC+IP address, MAC+ transmission layer port number.

1. 2. 4. QINQ

Vlan based on protocol is called protocol vlan, distinguished from vlan based on port.

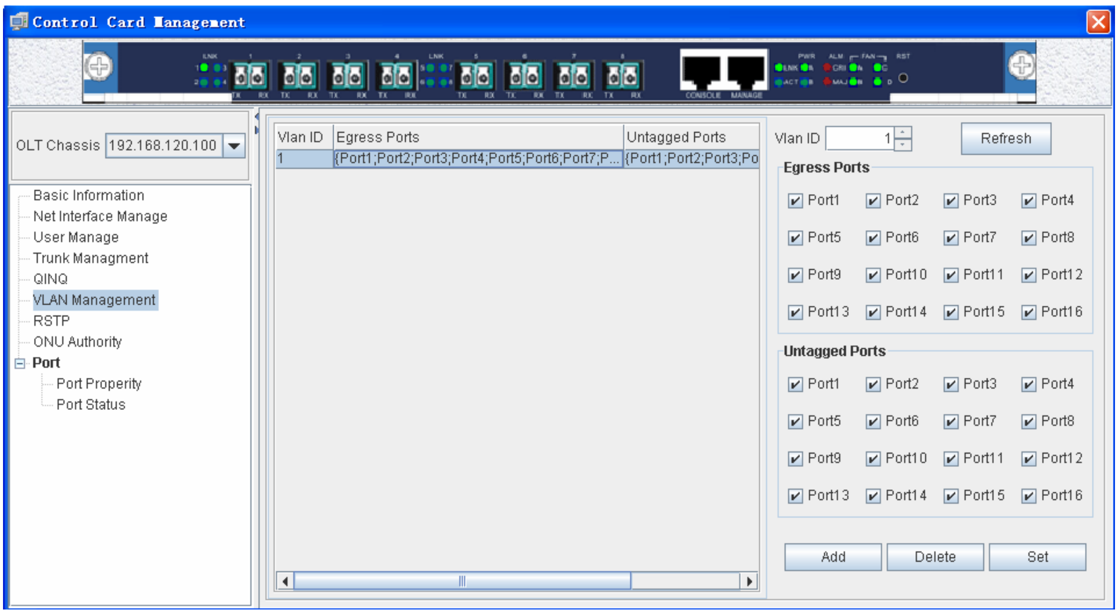
VLANs are created to provide the segmentation services traditionally provided by routers in LAN configurations. VLANs address issues such as scalability, security, and network management. Routers in VLAN topologies provide broadcast filtering, security, address summarization, and traffic flow management. By definition, switches may not bridge IP traffic between VLANs as it would violate the integrity of the VLAN broadcast domain.



QINQ

Users should maintain an overall permitted protocol pools before configuring VLAN based on protocol. Port-Protocol-Vlan trunk is realized only in the protocol pool.

1.2.5. VLAN Management

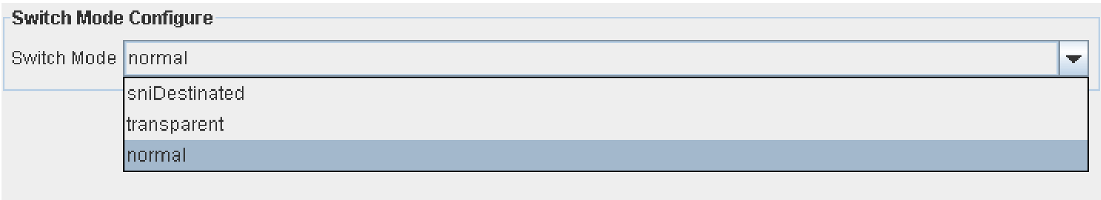


VLAN Management

Users could create Vlan or modify Vlan setting, designing Vlan's group port and untagged member port.

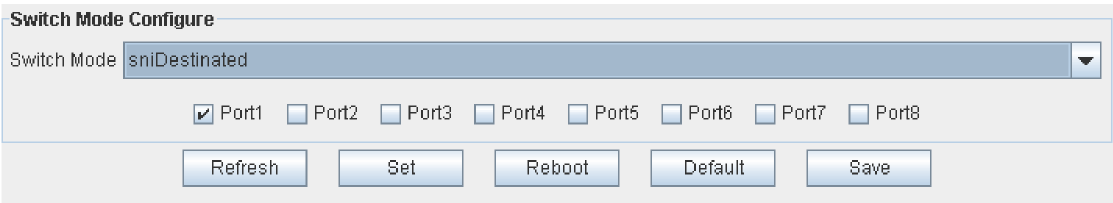
1. 2. 6. Switch Mode Configure

Management Root: Switch Control Card Management—Basic Information ---Switch Mode Configure



Switch Mode Management

When the switch mode is set port mode as sniDestinated?one of these 8 uplink ports must be used as uplink port .



These three switch modes explanation is as follows:

■

Normal Mode (Normal)

This is switch board's default working mode including 8 uplink SNI ports and 8 PON networking sideline port compliant with 802.1 switch. At this time , PON networking's user data could reach any one of 8 SNI uplink ports .The ONUs under different OLT could be interacted .According to OLT's

forwarding feature , different ONU under the same OLT can't be interacted .

■

Port Designated Mode (sniDestinated)

Under this mode ,user should choose one fixed SNI port as uplink port .All PON's networking data could be connected with uplink networking through this port .

Under this mode ,different ONUs from different OLT can't be interacted .

Different ONUs under the same OLT can't be interacted either .

■

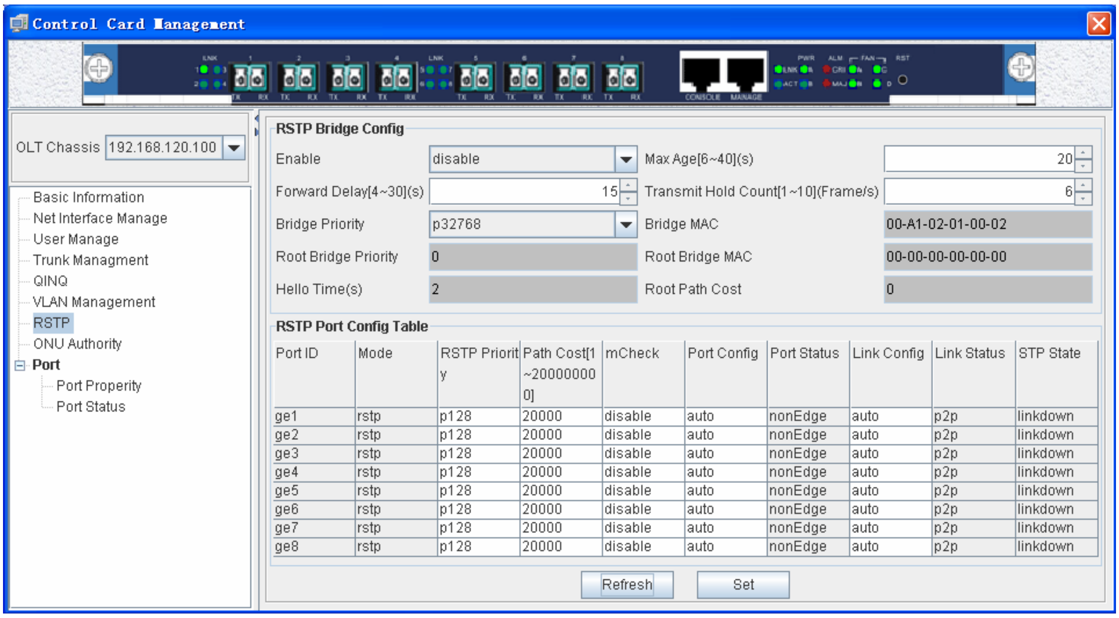
Transparent Transmission Mode (transparent)

Under this mode , 8 PON side ports and 8 uplink SNI ports are trunk ,meaning PON port 1(OLT) correspond with SNI,PON port 2 correspons with SNI2 .The case is the same with other pon ports.

1.2.7. RSTP (Rapid Spanning Tree Protocol)

The Spanning tree protocol (STP) is a link layer network protocol that ensures a loop-free topology for any bridged LAN. Thus, the basic function of STP is to prevent bridge loops and ensuing broadcast radiation. Spanning tree allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails, without the danger of bridge loops, or the need for manual enabling/disabling of these backup links. Bridge loops must be avoided because they result in flooding the local network.

Rapid Spanning Tree Protocol (RSTP), which provides for faster spanning tree convergence after a topology change.

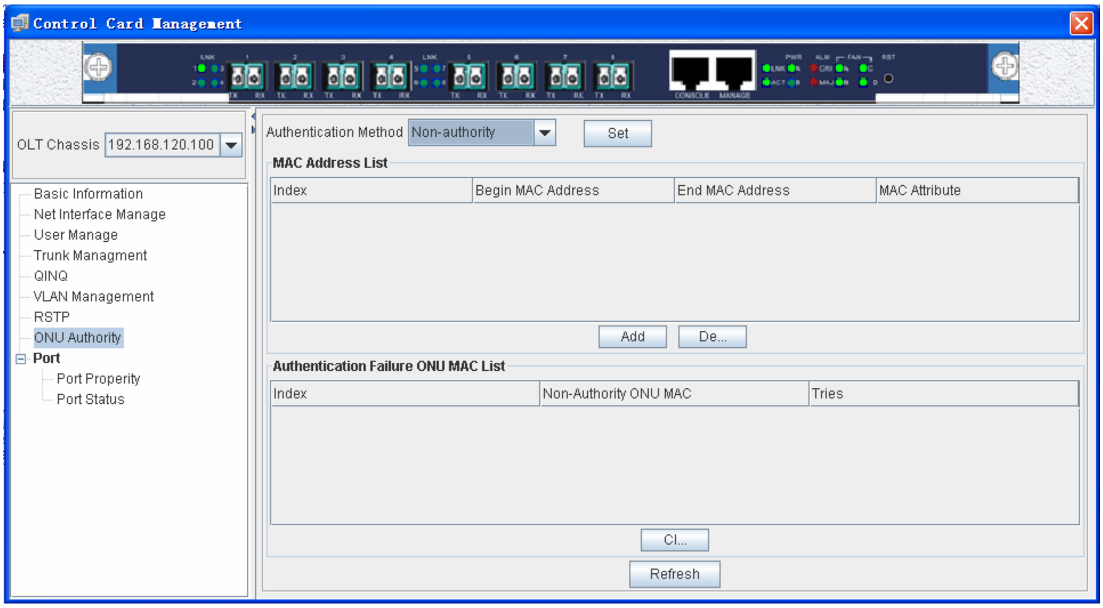


Port ID	Mode	RSTP Priority	Path Cost[1~200000000]	mCheck	Port Config	Port Status	Link Config	Link Status	STP State
ge1	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge2	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge3	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge4	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge5	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge6	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge7	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown
ge8	rstp	p128	20000	disable	auto	nonEdge	auto	p2p	linkdown

RSTP

1.2.8. ONU Authorization

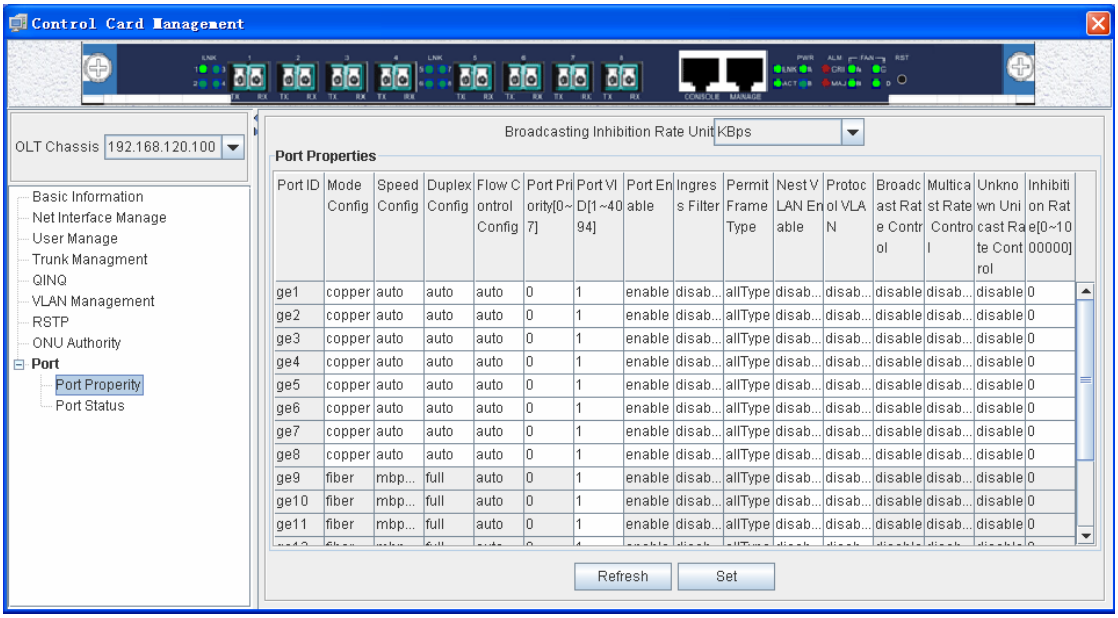
Without authorization, business circulation is not allowed belonging to illegal ONU after connecting ONU with PON port, except being authorized. ONU authorization adopts black and white list mode. The switch control board legally authorizes the ONU under PON ports by means with MAC address .MAC address listed in black list is illegal onu ,while those listed in white list is legal onu.



ONU Authorization

Remark: MAC address listed in black list could be added by one MAC address once or adding an address range.

1. 2. 9. Uplink Ports Parameters



Port Index

Port management interface above could configure 16 ports index including:

1） Port mode: cooper and fiber

2） Default VLAN:1~4094

3） Default port priority : 0~7

4） Ingress filter :enable or disable

5） Permit frame type: tagged ,untagged or allType

6） Port rate configuration: 10Mbps,100Mbps,1Gbps,10Gbps and auto (auto-negotiation);

7） Duplex mode configure: full duplex ,half ,and auto ;

8） Flow control : enable ,disabled or auto ;

9） Port enable setting: enable ,disabled;

10） Nest VLAN :enable, disable;

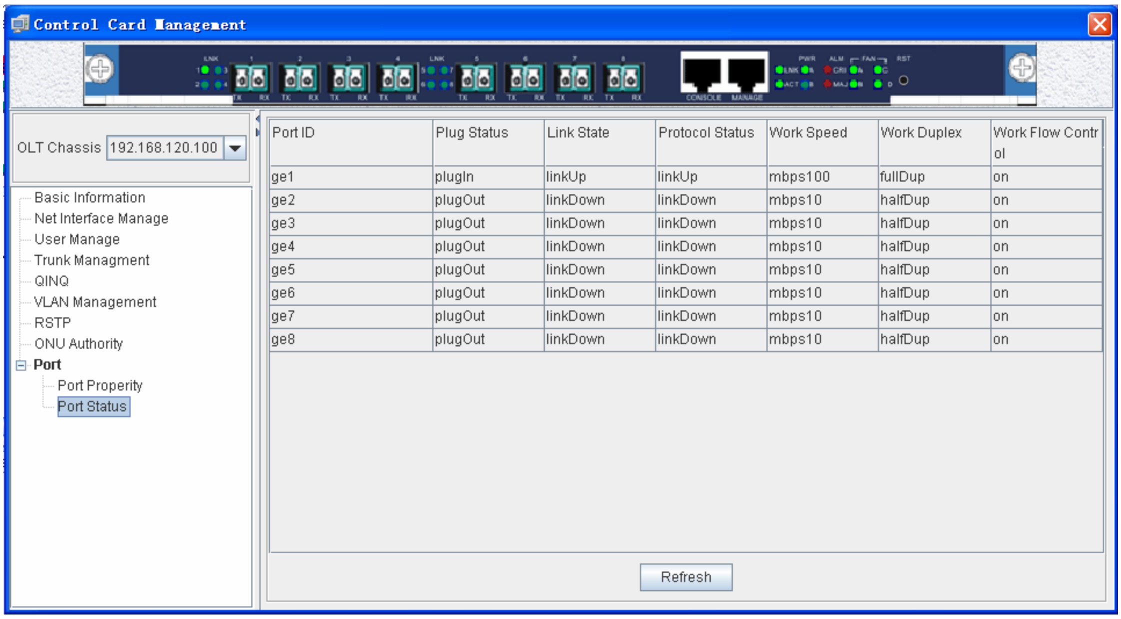
11） Protocol VLAN :enable ,disable;

12） Broadcasting Restriction : enable, disable;

13） Broadcasting inhibition rate: 1~100000.

1. 2. 10. Uplink Port Status

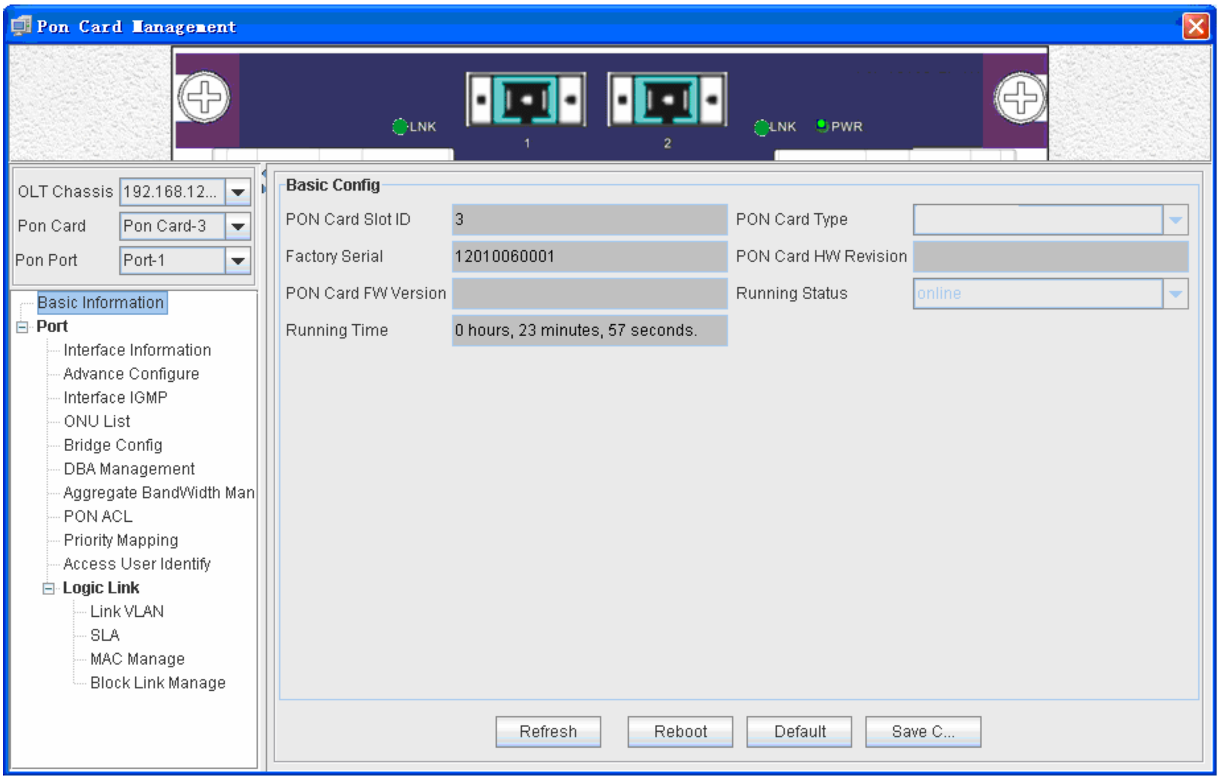
Port status interface shows all uplink ports working status information as follows:



Port Status

1. 3. PON Card Management

Double click PON card or PON port in the top tree or you could double click PON card in the chassis interface .Then “PON Card Management” window will pop out.



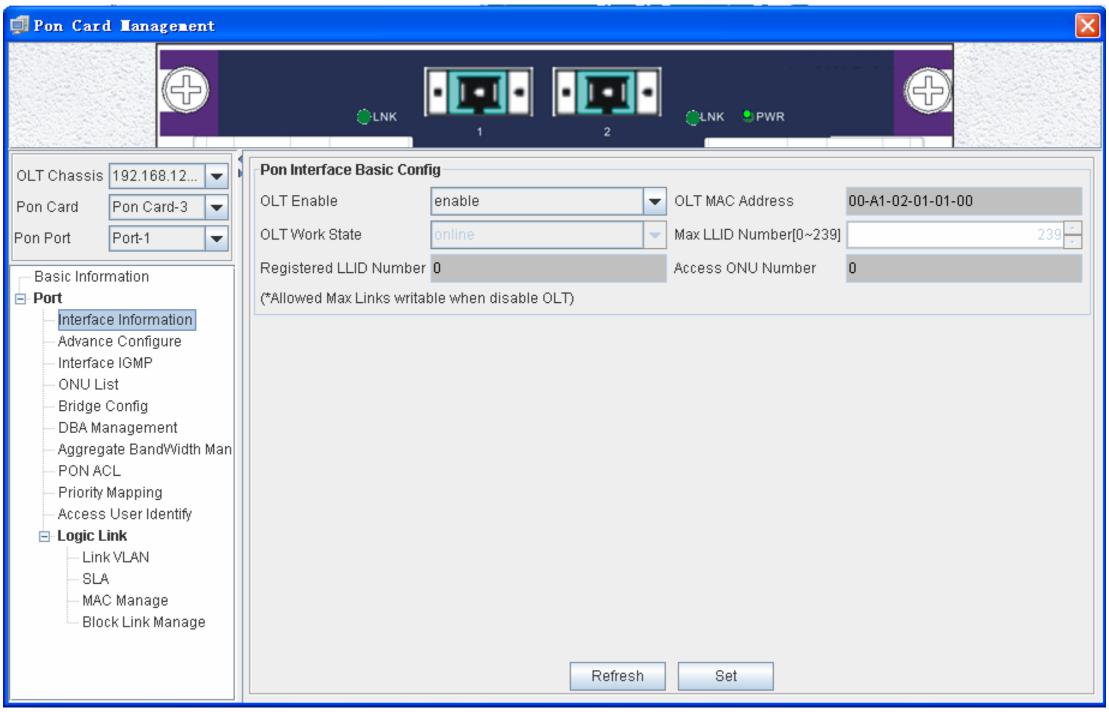
PON Card Basic Information

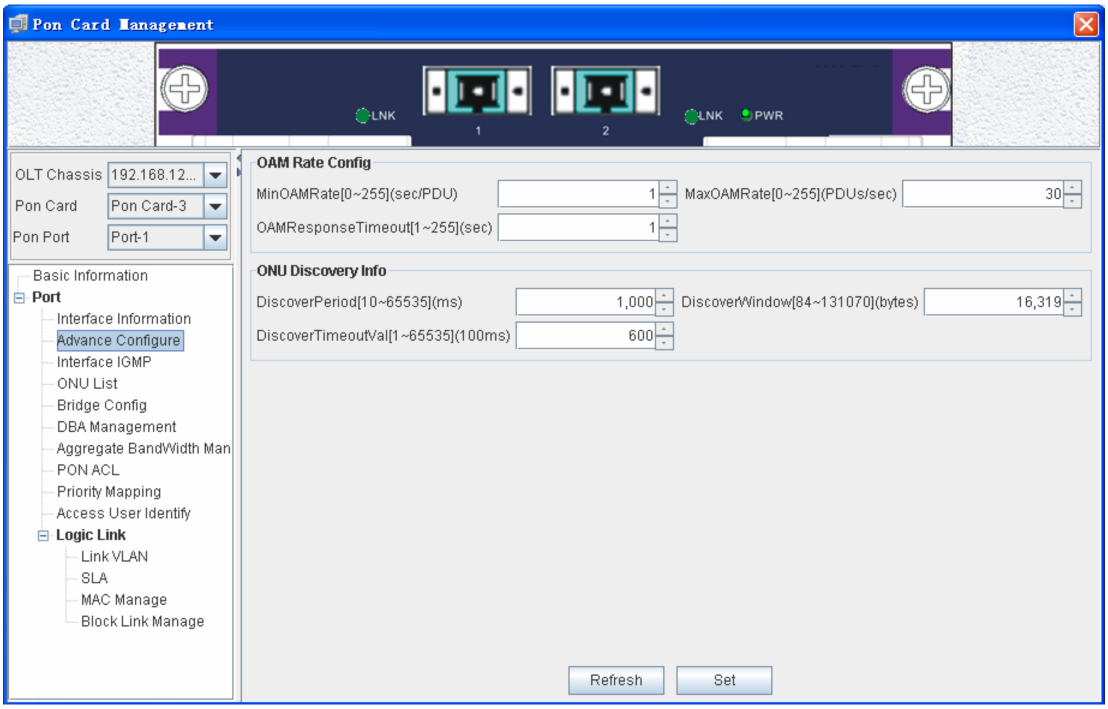
1. 3. 1. **Basic Information**

In the above picture, it displays PON card's basic working parameters. "Running time "is the PON card's running time from booting to current running status; Click "reset" to restart PON card.

1. 3. 2. **PON Port Information**

PON port information in the PON card



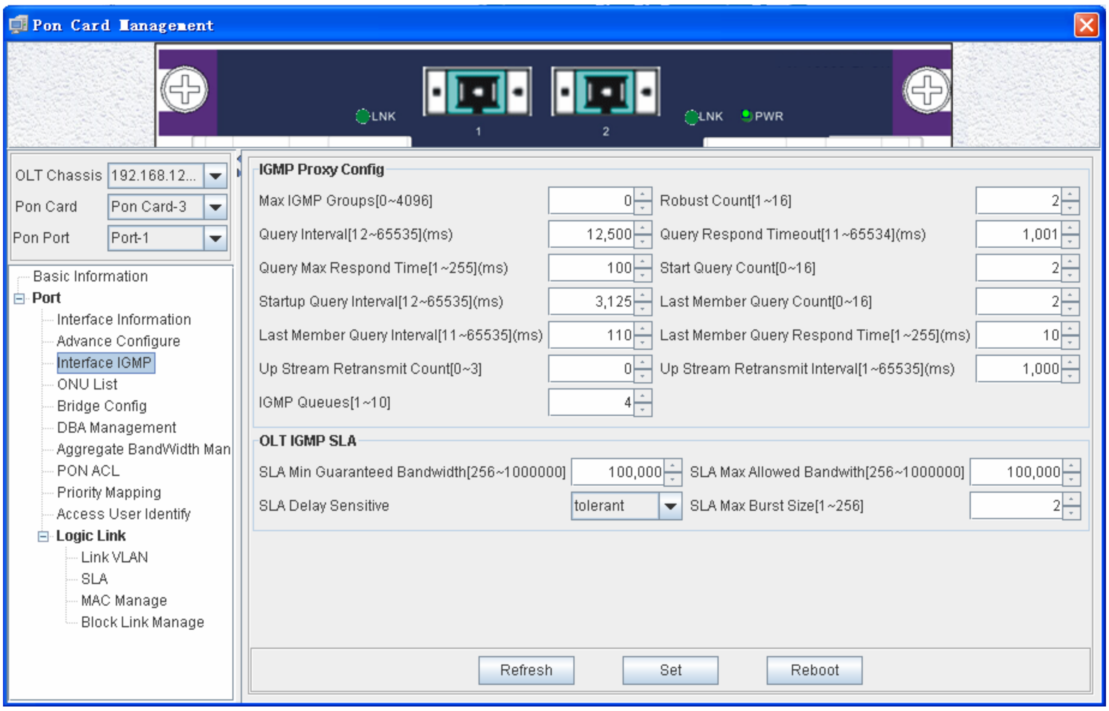


PON Port Information

"Scan": scan remote ONU equipments under corresponding

PON port; IGMP (Internet Group Management Protocol)

IGMP is used by IP hosts and adjacent multicast routers to establish multicast group memberships.



PON Port IGMP

PON port's IGMP setting should follow fixed logical relationship defined as follows:

Query Interval time > Query Respond Timeout

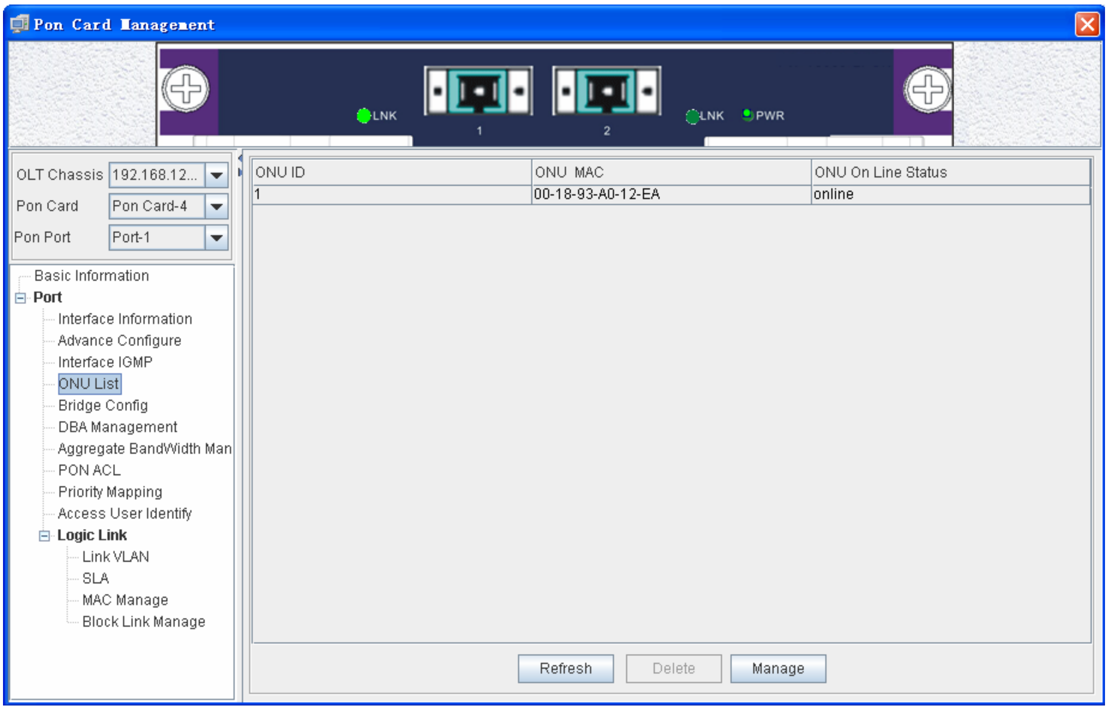
Query Respond Timeout > Query Max Respond Time X 10;

Last Member Query Interval > Last Member Query Respond Time X 10;

"Reset" button is to resume PON port's default value.

1. 3. 3. **ONU List**

ONU list under PON port is as follow:

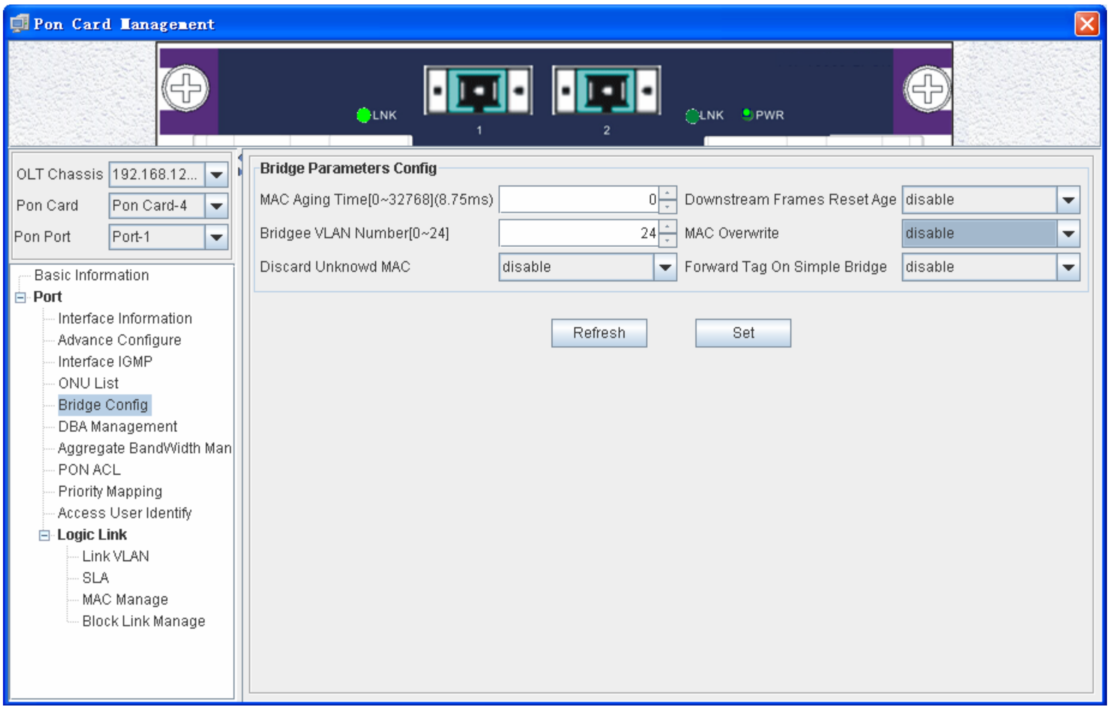


ONU list under PON Port

"Delete " button is to delete "offline" onus .

1. 3. 4. **Bridge Configuration**

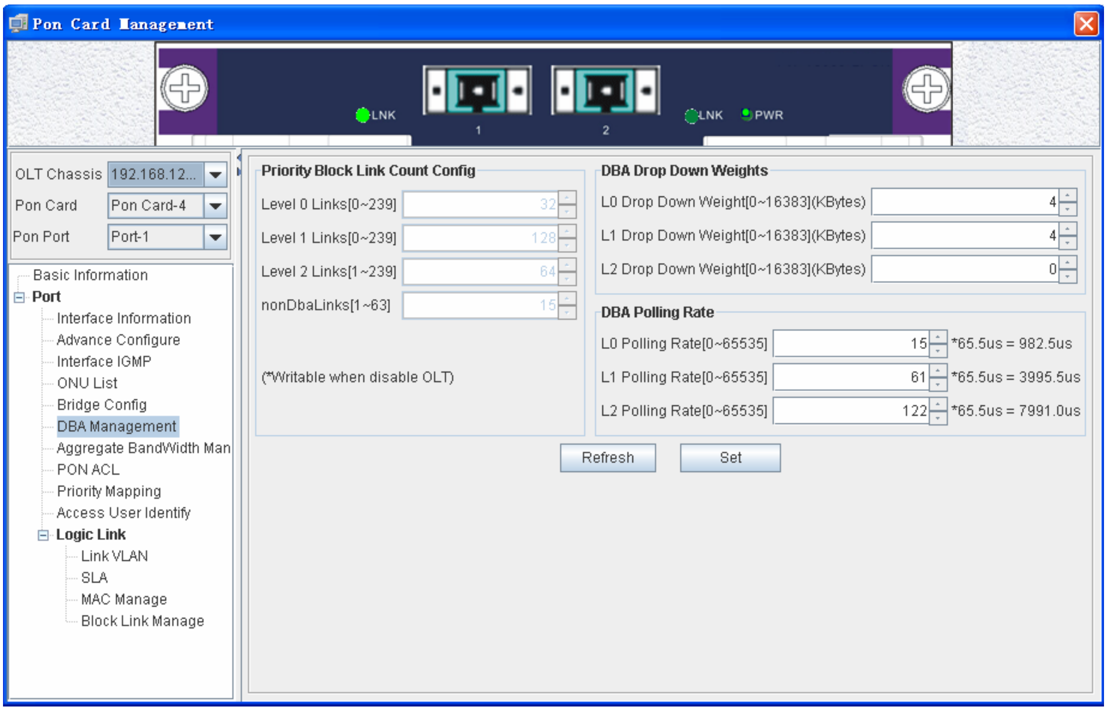
Bridge parameters under PON port shows below:



Bridge Parameters Configuration under PON Port

1. 3. 5. DBA (Dynamic Bandwidth Allocation) Management

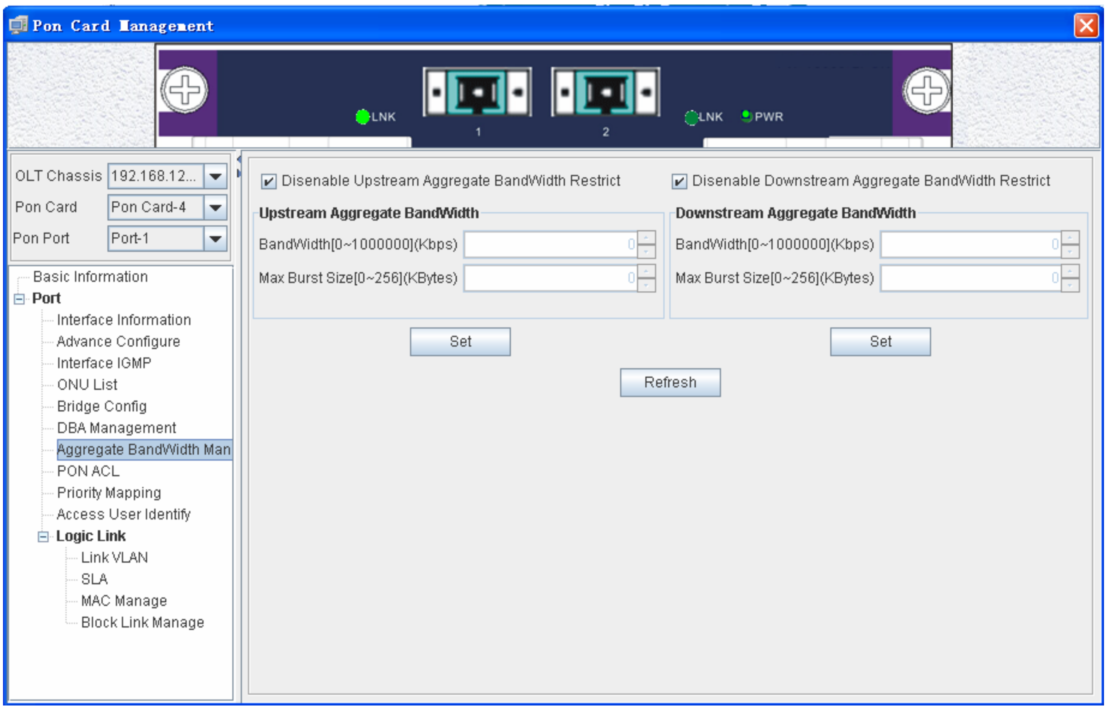
Dynamic bandwidth allocation is a technique by which traffic bandwidth in a shared telecommunications medium can be allocated on demand and fairly between different users of that bandwidth. This is a form of bandwidth management, and is essentially the same thing as statistical multiplexing. Where the sharing of a link adapts in some way to the instantaneous traffic demands of the nodes connected to the link.



DBA management under PON Port

Remark: Please disable OLT before setting each DBA link under PON port .

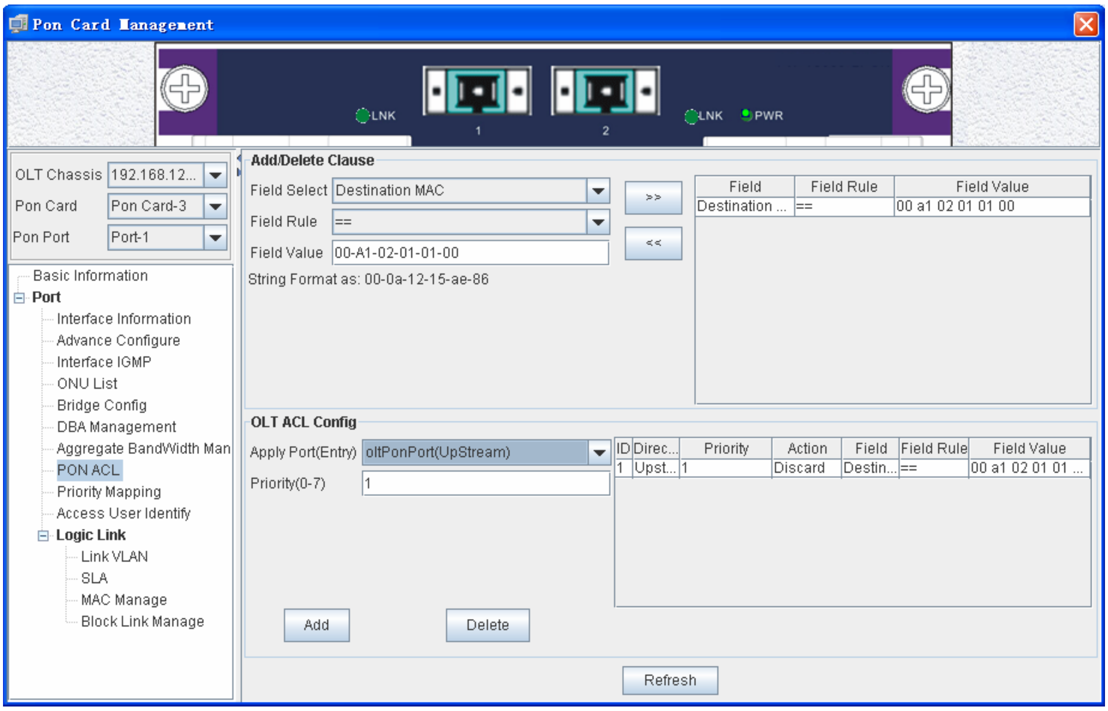
1. 3. 6. Aggregate Bandwidth Configuration



PON Port's Aggregate Bandwidth Management

1. 3. 7. ACL (Access Control List) Management

On some types of proprietary computer hardware, an Access Control List refers to rules that are applied to port numbers or network daemon names that are available on a host or other layer 3, each with a list of hosts and/or networks permitted to use the service. Both individual servers as well as routers can have network ACLs. Access control lists can generally be configured to control both inbound and outbound traffic, and in this context they are similar to firewalls.



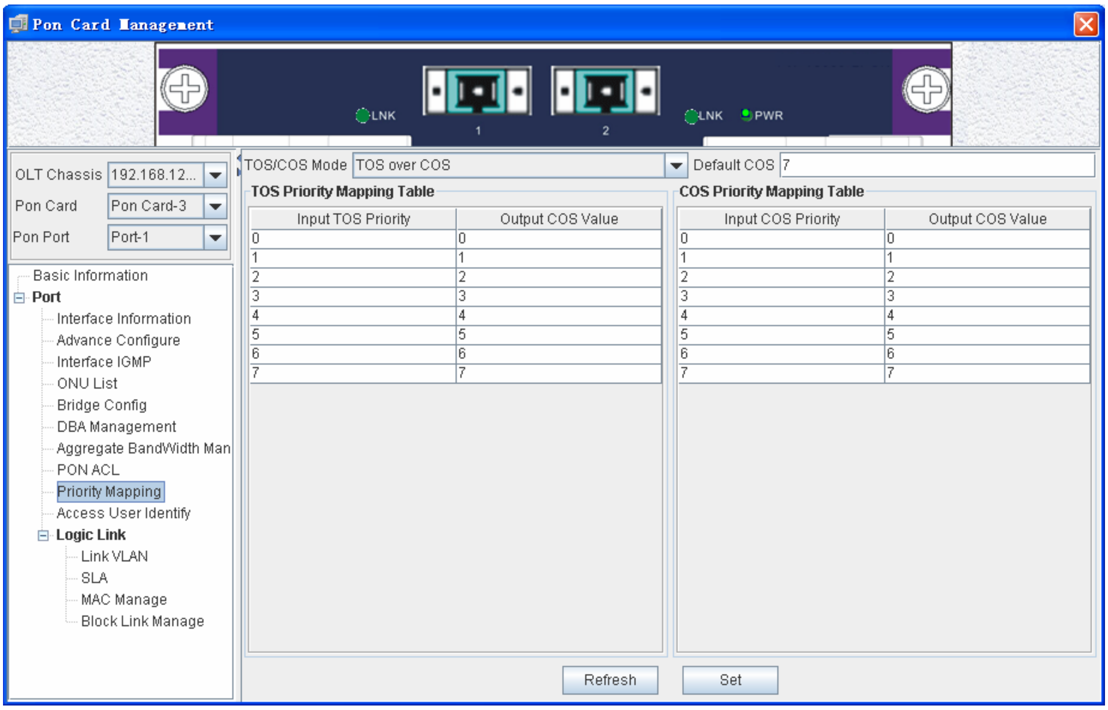
ACL Management under PON Port

In ACL interface, it displays EPON system's all matching clause and current PON card's filtering rules.

">>": Add the match clause in the left column to the EPON system and displayed in the right column.

"<<": Delete the records in the right column.

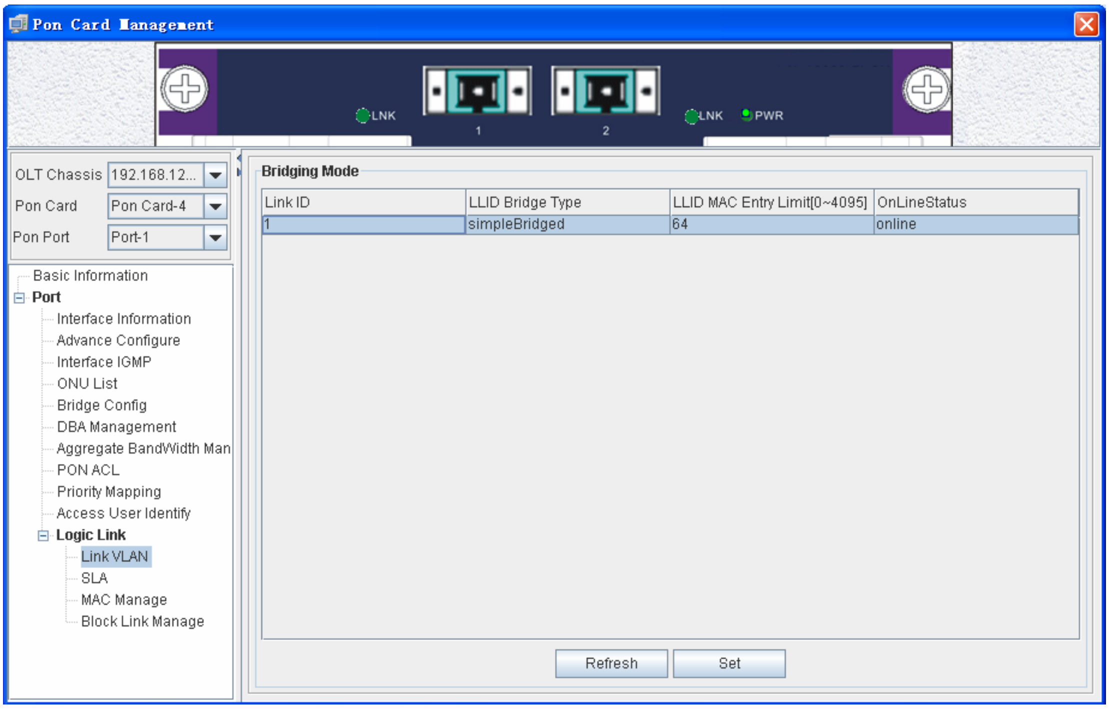
1. 3. 8. Priority Mapping



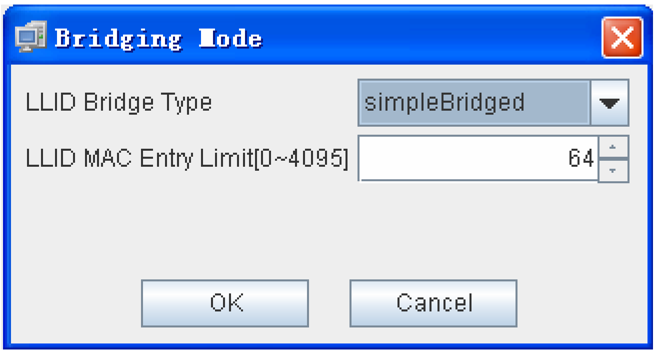
PON Port's Priority Mapping

In the above interface, it displays the configuration of TOS, COS value under current PON port.

1. 3. 9. LLID Bridge Mode



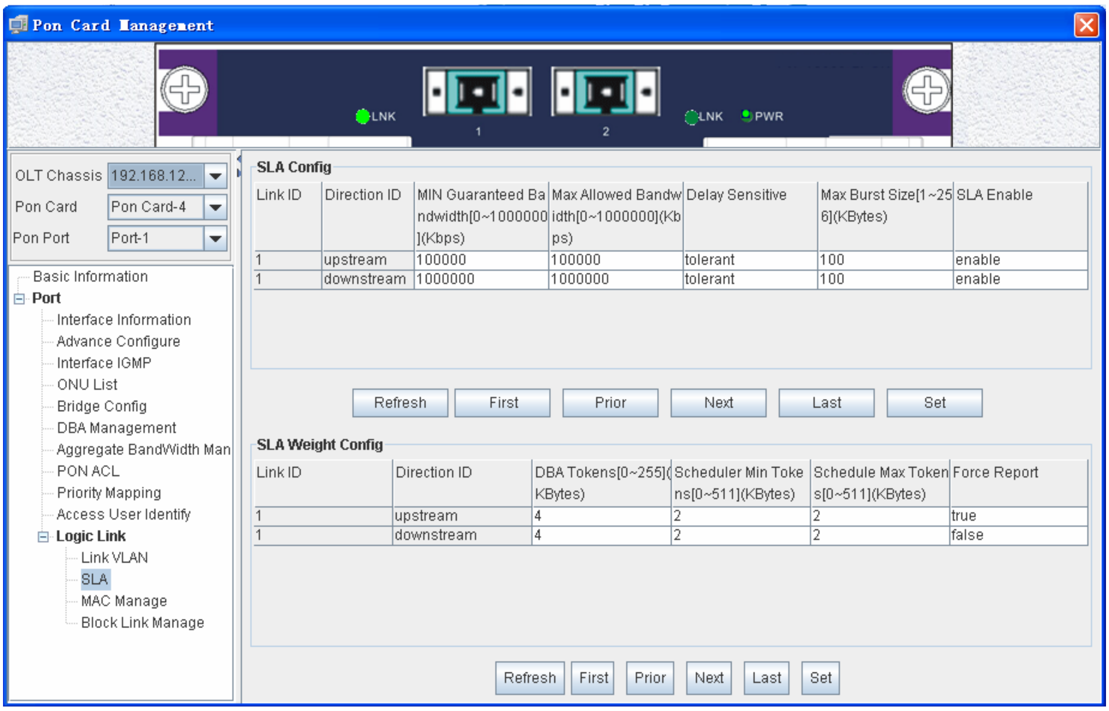
LLID Bridge Type under PON Port PON



LLID Bridge Mode Setting

1. 3. 10. SLA (Service Level Agreement)

EPON service level agreement displays service level protocol management information under current PON port .



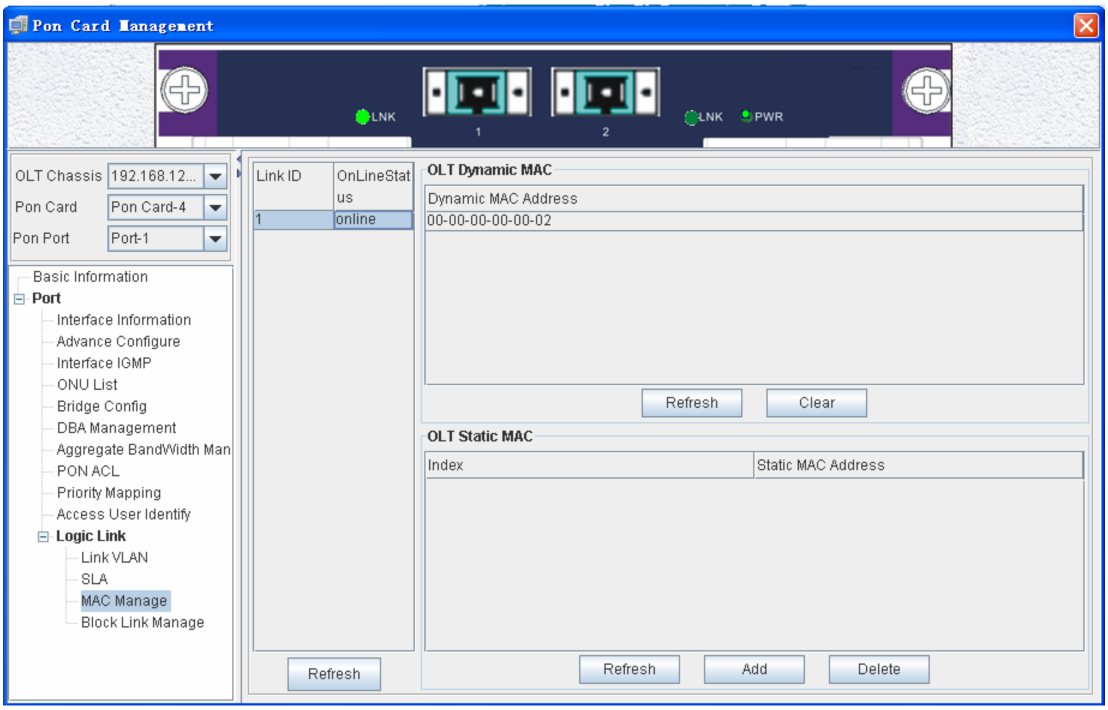
SLA for PON Port

Remark:

1) "Delay" parameter could set as "tolerant" or "sensitive"; When "delay" is sensitive ,the minimum guaranteed bandwidth equaling maximum permitted bandwidth; Only when "delay" becomes "tolerant" ,you can set minimum guaranteed bandwidth and maximum permitted bandwidth;

2) Minimum guaranteed bandwidth ≤ Maximum permitted bandwidth

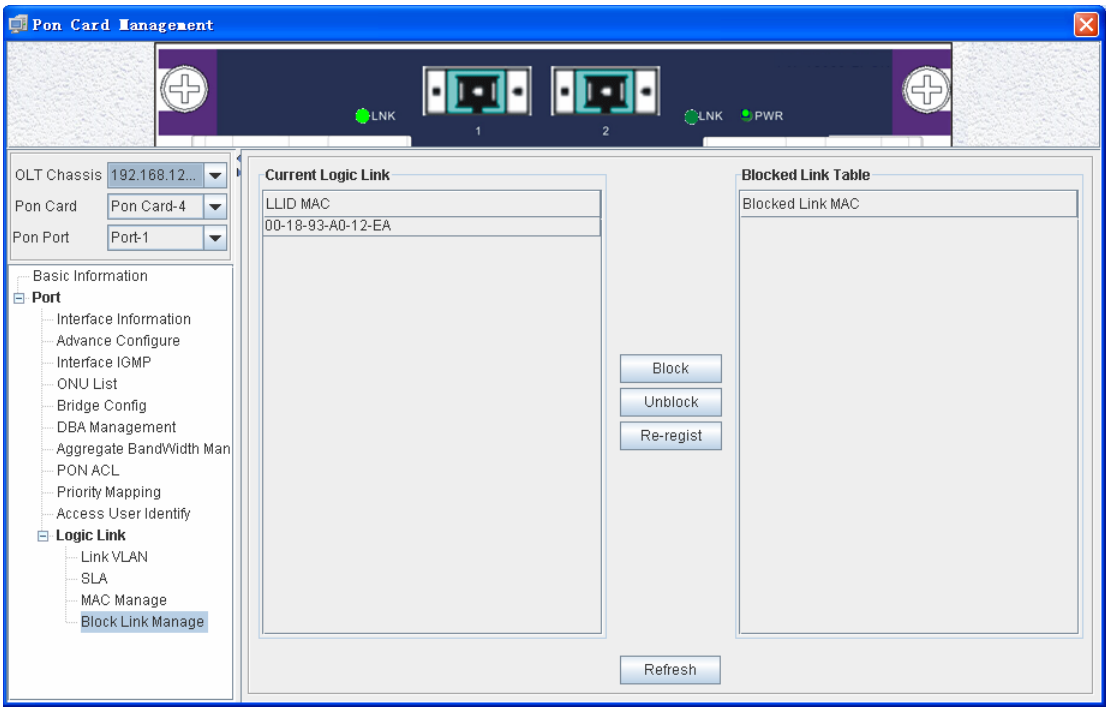
1. 3. 11. MAC Address Management



MAC Address Management for PON Port

"Add" : Adding static MAC address.

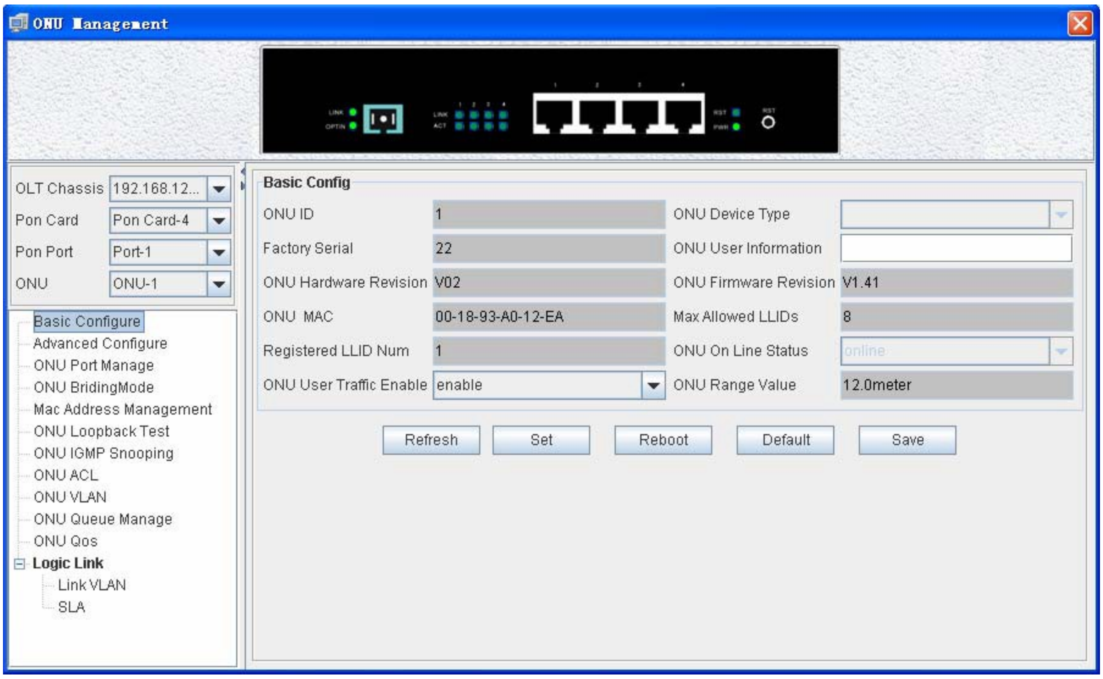
1. 3. 12. Blocked Link Management



Blocked Link Management for PON Port

1.4. ONU Management

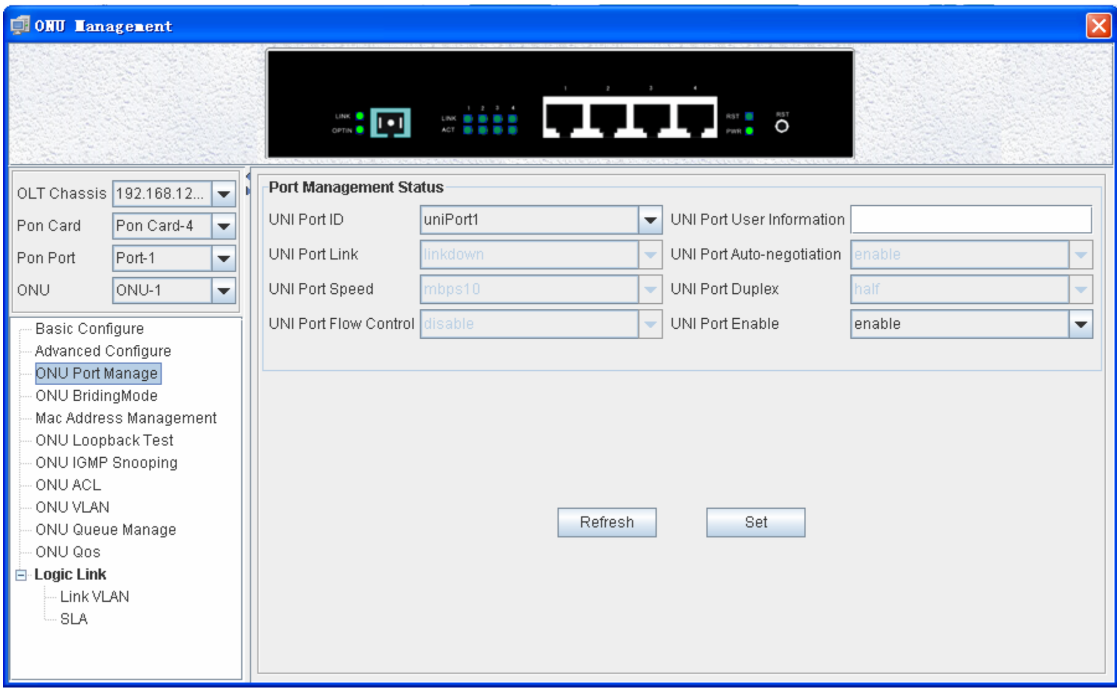
Double click ONU in the topology and ONU management interface will pop out as follows:



ONU Management Interface

The interface shows ONU's LED real-time status .Uplink Link LEDS indicates the status of connecting to OLT and the other four ONU LEDs shows the status of ONU port connection with users.

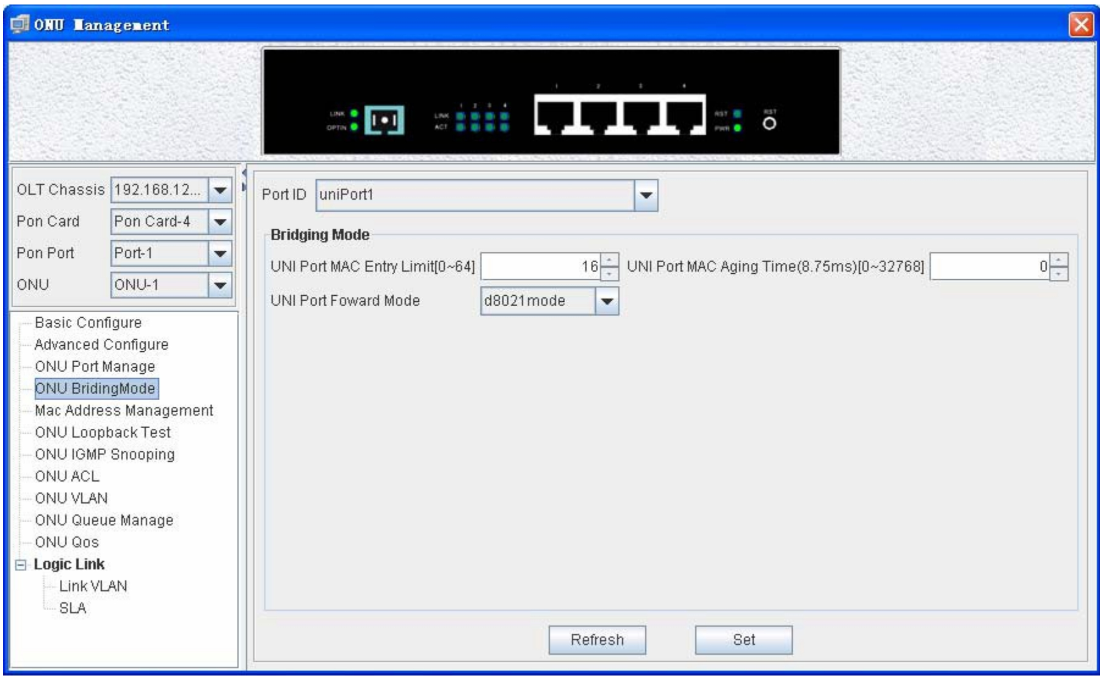
1.4.1. ONU Port Management



ONU Port Management

"ONU port ID" drop-down menu lists ONU's all downlink ports. Only when port management status is "able", connecting status "connected" and auto-negotiation is shut off, speed, full duplex and flow control is available for setting .

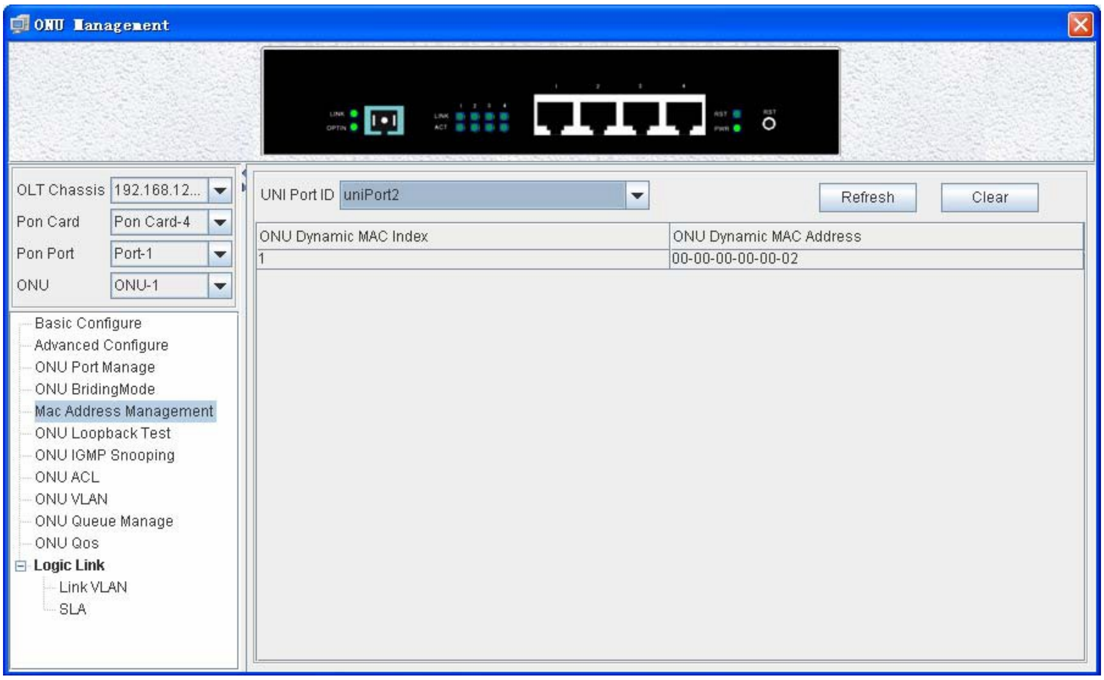
1.4.2. ONU Bridge Mode Configuration



ONU Bridge Configuration

"MAC address learning mode could select "d8021mode" and "MAC visit control mode". "d8021mode" will broadcast those unlearned MAC address.

1.4.3. MAC Address Management



MAC Address Management

1.4.4. ONU Loop back Test

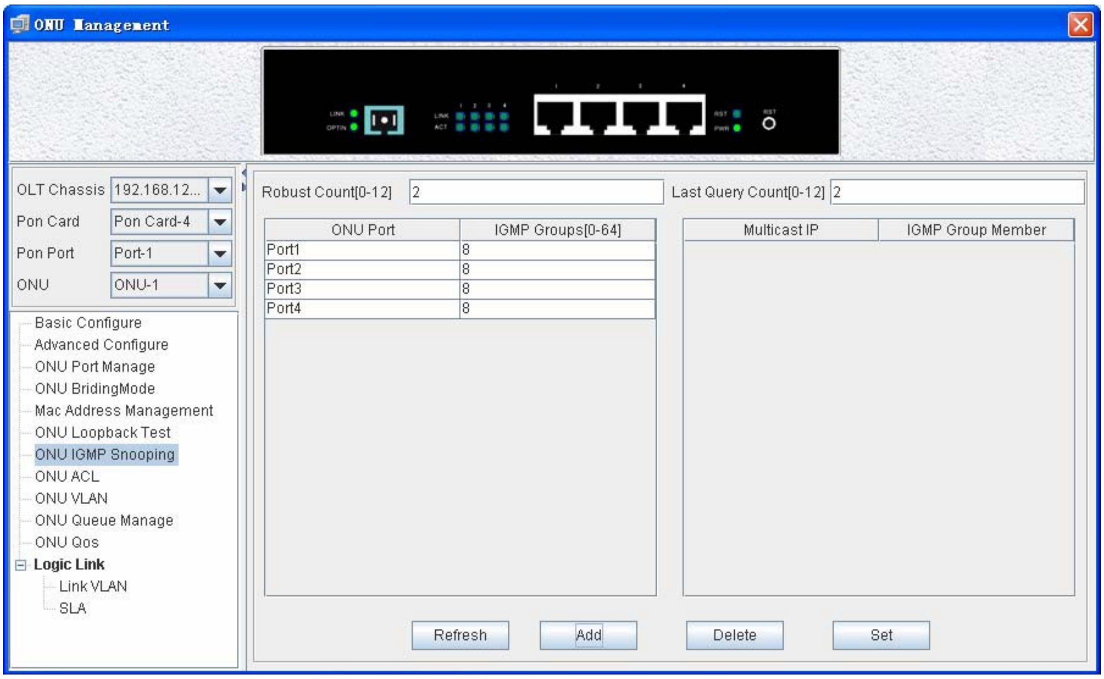


ONU Loop Back Test

When you make ONU look back test , please enter correct "frame number", "Payload Size", "VLAN Tag", then you could click "test" .OLT will send back loop back test frame to this ONU . When the test is under process and the status will show "busy" ,users can't go on any other test .The test status shows "ready" after OLT send back test results . At this time ,user could continue the test operation .

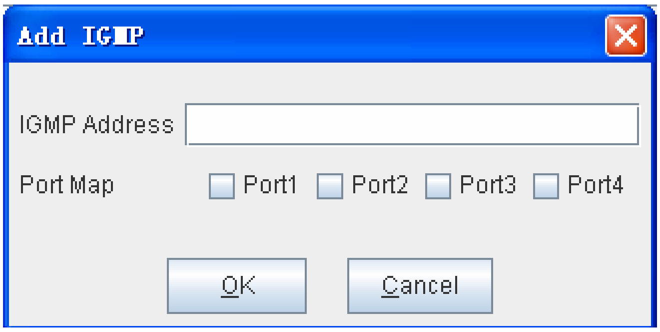
Users could click "reset" to make the test status "ready".

1.4.5. ONU IGMP Snooping



ONU IGMP Snooping

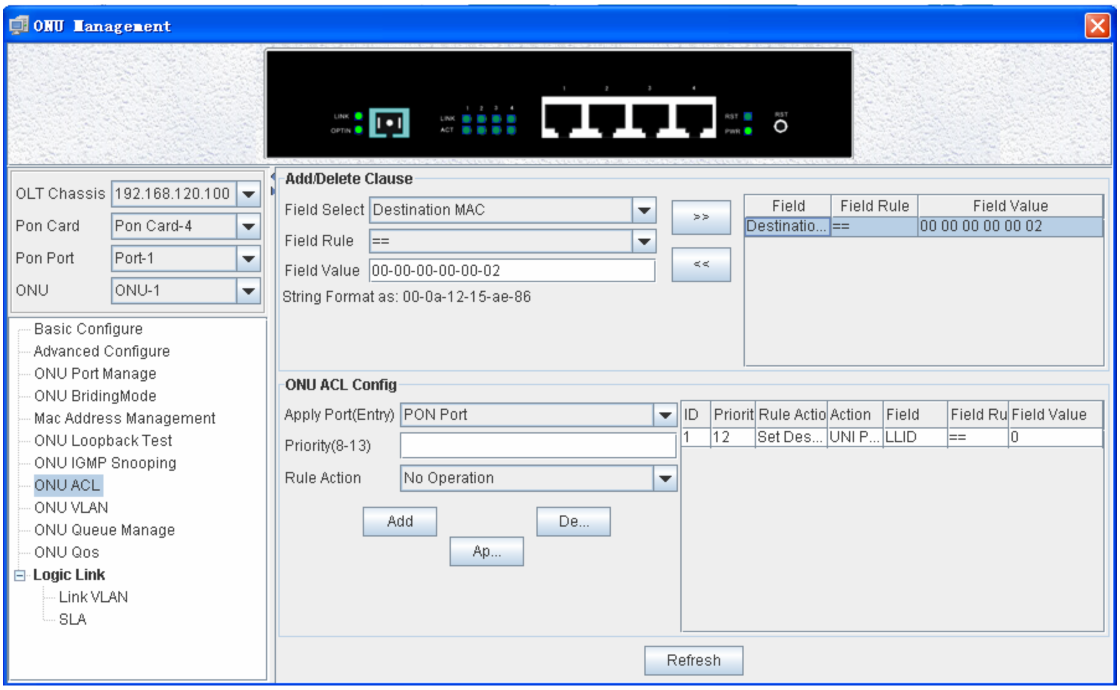
Click "add" to the following "add IGMP".



Add ONU IGMP

Please enter "IGMP IP Address", select port ,click "Ok" to add ONU's IGMP IP address and corresponding port member.(Remark: Valid IGMP IP address range should be 224.0.0.0~239.255.255.255.)

1.4.6. ONU's ACL Configuration



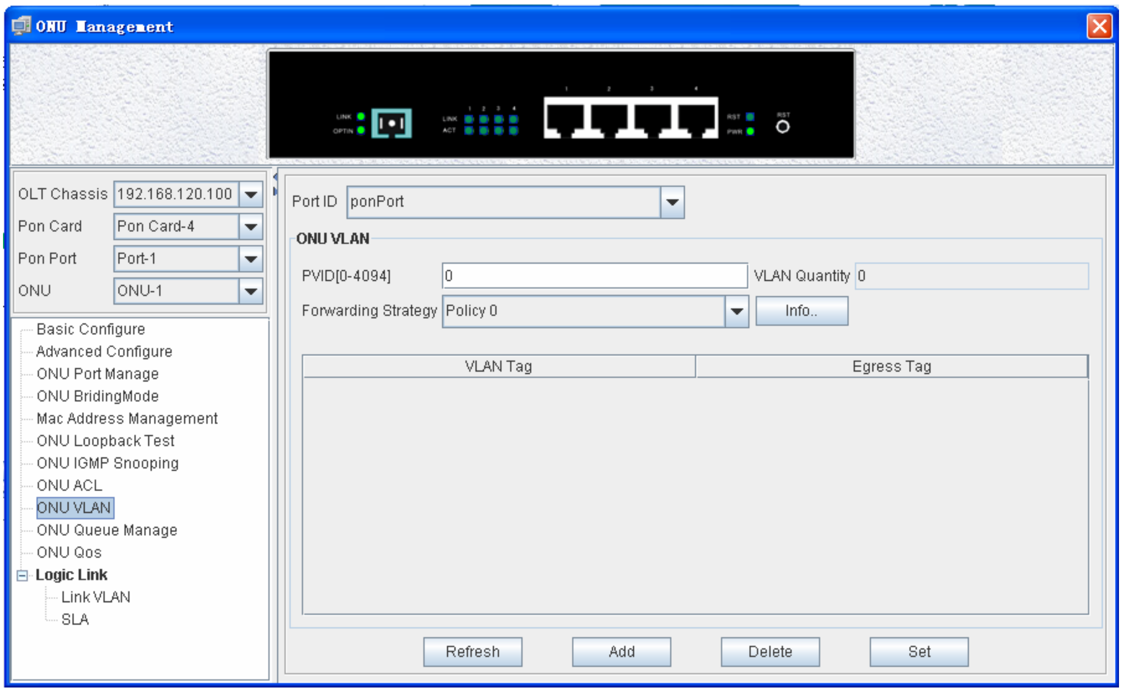
ONU ACL Configuration

ONU's ACL management operation is the same as OLT PON card's ACL management.

">>" : Add the match values in the left column to the EPON system and displays it in the right column.

"<<": Delete the selected records in the right column.

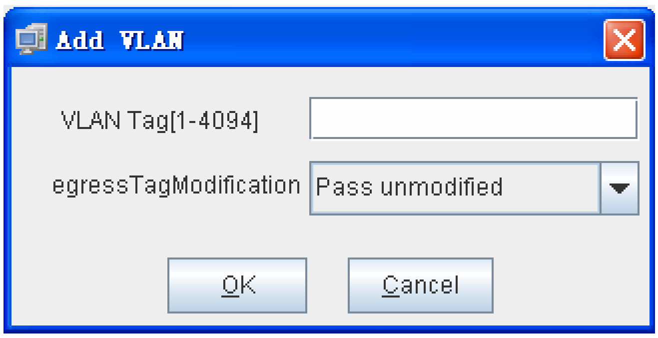
1. 4. 7. ONU VLAN Configuration



ONU VLAN Configuration

Click "Port ID" drop-down menu. It will display ONU's all ports including PON port and other 4 FE ports.

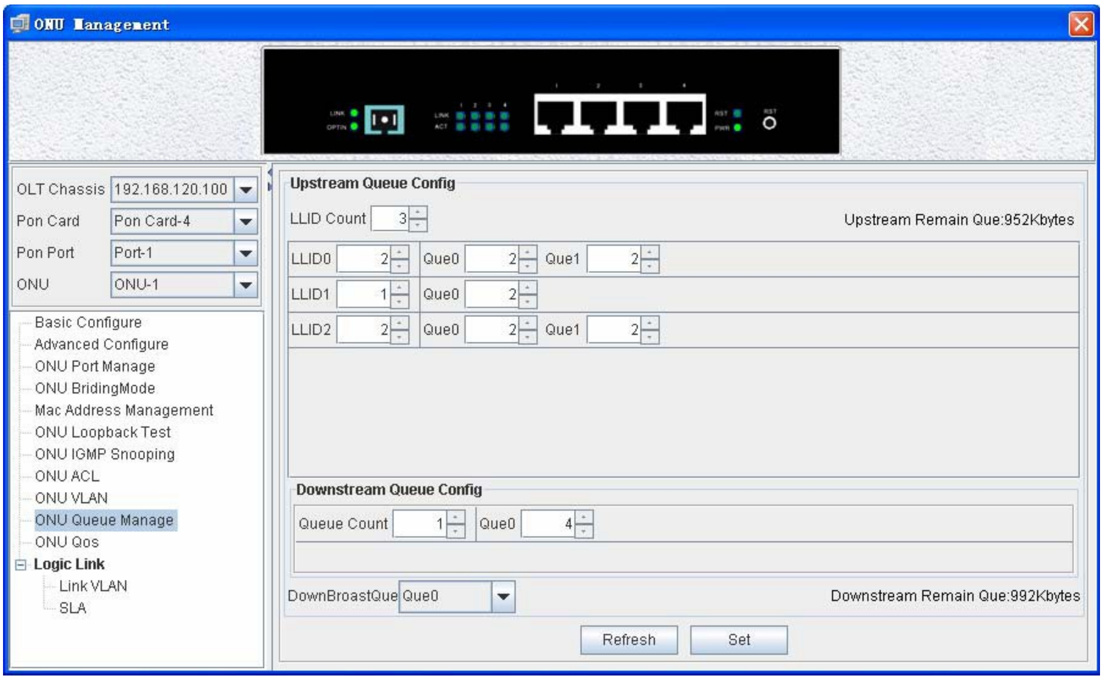
Click " add" to add VLANs.



Add VLAN

Users could set VLAN Tag, select output frame Tag mode and click "ok" to add corresponding ONU port's VLAN.

1.4.8. ONU Queue Management

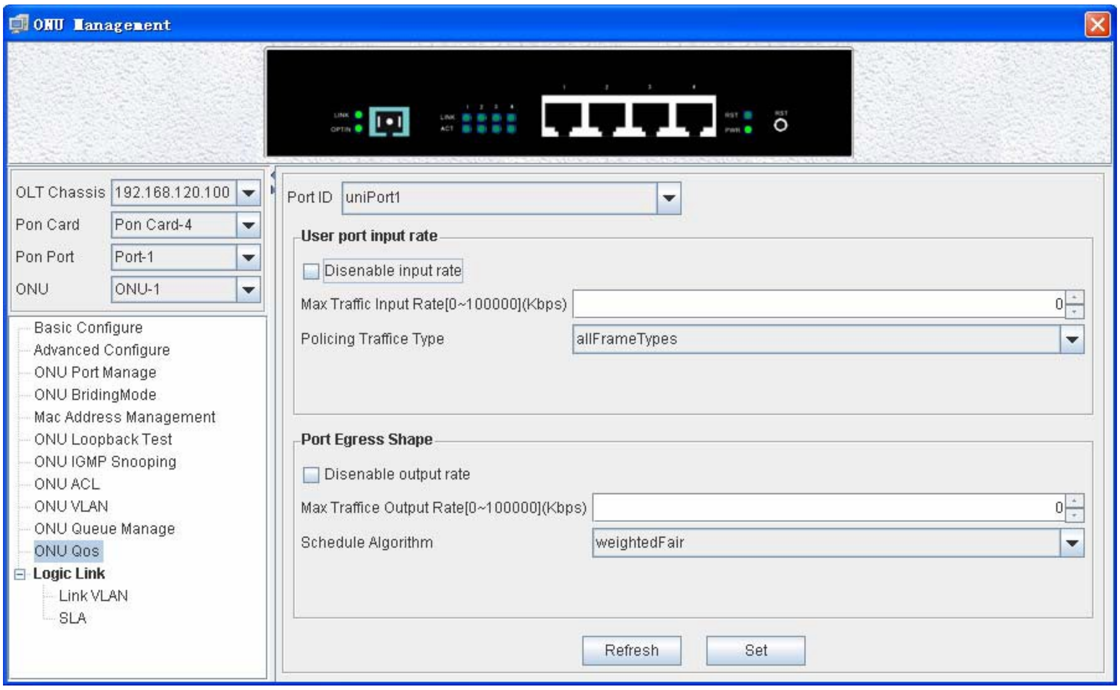


ONU Queque Management

"Upstream queue configuration" can set 8 LLID and 10 Queues at most.

"Downstream queue management" can set 17 Queues at most.

1. 4. 9. ONU Port Flow Control/Shape Management



ONU Port Flow Control/Shape

"Input Flow Control" drop-down menu lists 14 types including "broadcasting" "multi-cast broadcasting".

"Output flow shape egress" offer two calculation "weighted fair" and severe priority level" .

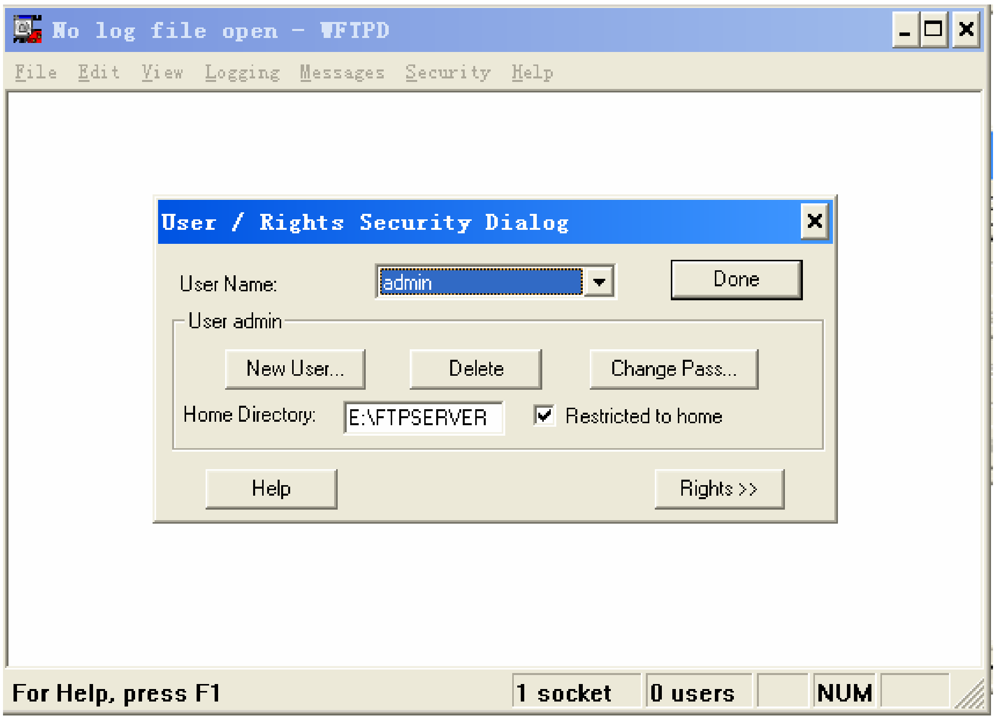
1. 5. EPON Upgrading

1. 5. 1. Upload Files

1. Configure FTP Server

EMS installation software has included FTP server .If the EMS is completely installed , you could find it under WTFPD subdirectory.

Start Wftp.exe .Select [Security]-> [Users/rights] ,then set FTP Server's user name ,password and corresponding FTP root .

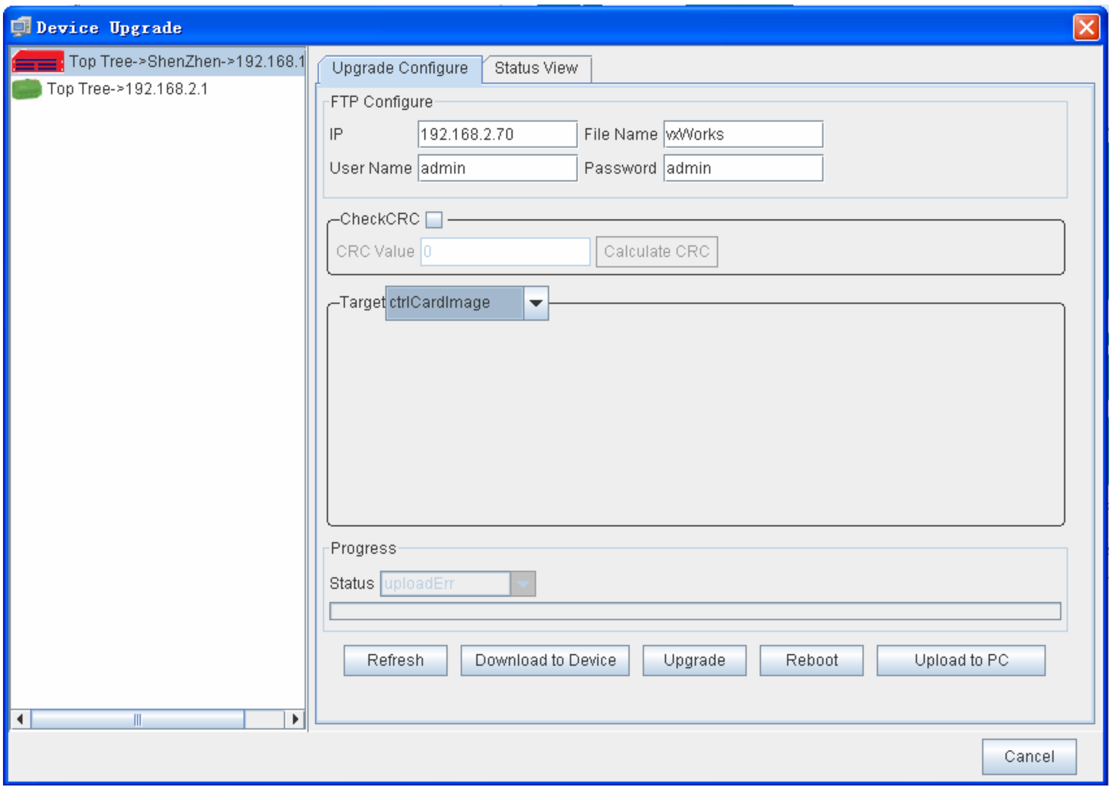


FTP Server User Management

2. Copy upgraded files to FTP Server's root directory

3. Configure Upgrading Parameters

1） Please select "Configuration"—"Upgrade Configure" to enter the following interface:



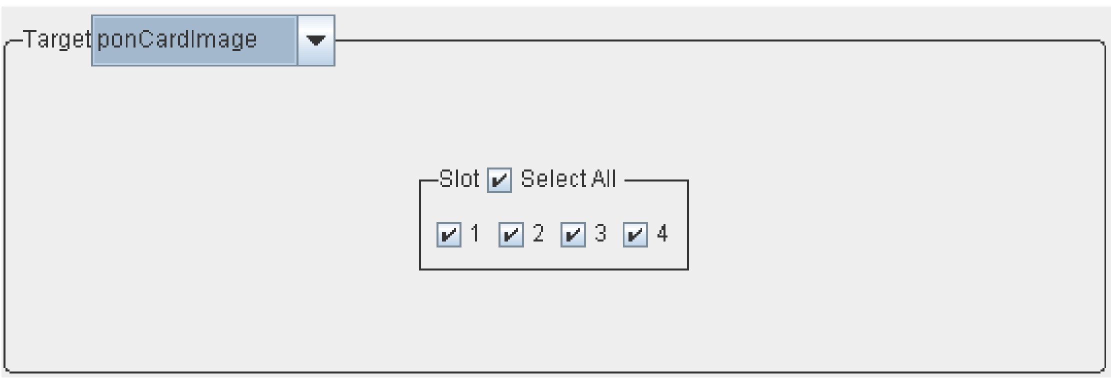
Equipment Upgrading

2) Please select the EPON device to be upgraded.

3) Please input FTP Server's IP address,user name ,password and upgraded file name.

4) Select Upgrading Target

If you choose "ctrlCard" ,you don't need to select upgrading slot ,port and ONU again .



If you select "PON Card", you need to select the PON slot for the appointed PON card;

5) Click"download to equipment" ,EMS will send the input parameters to OLT, then OLT will connect to the appointed FTP Server automatically and download the upgrading files.

6) After the downloading has been completed, please click "Upgrade". If you select "checkCrc", OLT will calculate downloaded upgrading file's CRC value. If the result is the same as EMS's CRC value, the upgrading will be started.

4. Configure Uploading Parameters

1) Please input FTP Server's IP address, user name, password and upgraded file name in the interface.

2) Click "Upload to PC" ,EMS will upload the files from OLT to FTP directory .

1. 5. 2. **Download Files**

GEPON file downloading is to download GEPON's programs to local's ftp server backup.

The operation is the same as upgrading process .Please operate FTP Server .Click the "Configure" menu –"upgrade equipment" ," upload to PC" .EMS will upload the OLT files to the FTP directory .